

This invention relates to window frames and more particularly to such frames as are employed for basement windows.

It is the present practice in the construction industry in this country to sub-contract the building of basement structures to another party. As a result of this practice it has not always been possible to regulate the quality of the components or workmanship involved in the windows and frames employed by the basement contractor. There has now arisen a practice in which the principal contractor purchases the window components and supplies these to the sub-contractor for installation. Even in spite of this practice quality cannot be assured and frequent replacement has been necessary for a variety of reasons, either arising from defective material or workmanship. Not least among these factors is the fact that basement windows are subject to several problems not inherent in upper storey windows. Wooden window frames are subject to moisture saturation on the lower sills, and the top sill together with the side members, due to an absence of air circulations, develop dry rot.

However, these considerations apart, there has been a growing demand for an improved frame which is durable and may be installed with facility.

The installation costs are probably the greater proportion of the total cost since there must be a coordination between carpenter and mason.

To obviate these various disadvantages in the prior art and provide an improved window frame is therefore the main object of this present invention.

Accordingly, there is provided a preformed window frame structure which constitutes an integral structural element and which comprises a rigid header member, a rigid sill member, and



a pair of vertically extending rigid jamb members rigidly secured between corresponding ends of said header and sill members to define a rectangular opening in said integral structural element, said jamb members each being formed to include at least one vertically extending reinforcing element intermediate the width thereof, said header member and said sill member each providing inner and outer longitudinally extending reinforcing channels, said channels on said header and said sill members being vertically aligned, and securing means on each of said header, sill and jamb members for fixing said frame in a wall, said reinforcing channels in said header and sill members each having channel dividing liners, each forming a pair of sash receiving channels.

These and other features and objects will be more apparent from the accompanying description and drawings in which:

Figure 1 is a general perspective view of a window frame assembly in accordance with the present invention;

Figure 2 is a section taken along line 2-2 of Figure 1;

Figure 3 is a section taken along line 3-3 of Figure 1;

Figure 4 is a perspective view with parts cut away of the window frame assembly shown in Figure 1 together with the track liners and installed windows;

Figure 5 is a view taken along line 5-5 of Figure 4;

With reference to the drawings Figure 1 shows a general perspective view of a window frame in accordance with the present invention from what will be, when the frame is assembled in the wall, the exterior side of the frame. The frame is generally indicated at 10 and comprises essentially a header member 12, a pair of vertically extending jambs, 14 and 16, and a sill member 18.

Each of these members is of a heavy gauge metal which is

blanked, pierced and formed by drawing over forming dies.

The header member 12 comprises external and internal flanges 20 and 22 respectively. When secured together with the remaining components in the frame these flanges 20 and 22 extend substantially vertically upward. Immediately inward of the flange 20 and adjacent to the bottom end thereof there is a short planar portion 24 which along its inner edge is connected to a first integral upwardly extending channel 26 having outer and inner walls 28 and 30, respectively, which are connected by a planar portion 32. Outward of flange 22 as with flange 20 and adjacent to the bottom thereof there extends outwardly a short planar portion 34 and outward again of this planar portion a second, or inner integral channel, 36 is provided. This inner channel has side walls 38 and 40 and a top wall 42. Side walls 40 and 30 of channels 26 and 36 are connected by an intermediate planar portion 48. By forming the header member 12 with channels 26 and 36 extending longitudinally thereof the header member 12 due to the high yield strength of the metal as a result of the drawing is provided with greater rigidity than it would have in the absence of these integral channels 26 and 36. The strength of the header member 12 is thereby considerably increased and in certain situations the use of a lintle such as is employed in conventional practice may be dispensed with.

The sill member 18 has a construction which is similar to that of the header member 12. As shown, sill member 18 comprises outer and inner flanges 50 and 52 respectively. The outer flange 50 is at its outer edge connected to an external sill portion 54 which slopes upwardly and inwardly to a small ridge 56. Ridge 56 also provides the external wall of an external integral channel 58 having a bottom wall 60 and an inner wall 62. The

inner flange 52 adjacent its top edge is bent outwardly, that is with respect to the wall, to provide a short inner planar portion 64 and outward again of this there is provided an integral channel 66 with side walls 68 and 70 and a bottom wall 72. The inner and  
 5 outer walls 62 and 70 of channels 58 and 66 are connected adjacent their top edges by an intermediate planar portion 74. As with the header member 12 the provisions of the integral channels such as 58 and 66 in the sill member 18 provide added strength relative to a structure which does not have such channels.

10 The vertical jamb 16 has inner and outer flanges 76 and 78 respectively. Flange 78 is connected along one side to a wall 80 which is provided on its upper and lower edges with projections such as 82 and 84 respectively. These projections engage with the outer channels 58 and 26 on the sill and header members 18 and 12  
 15 respectively. As with flange 78 a wall panel 86 is connected outward of flange 76 with corresponding projections 88 and 90 which engage and sit in channels 36 and 66 respectively. Between both of these aforementioned sets of projections and immediate wall panels 86 and 80 the vertical jamb 16 is provided with a vertically  
 20 extending reinforcing channel 92 with interior side wall 94 and exterior side wall 96 and a vertical wall 98.

Vertical jamb 14 has a similar configuration to vertical jamb 16 with similar projection channels and a similar channel arrangement thereon. In both instances the provision of the channels  
 25 not only reinforces the vertical jambs 14 and 16 but as will be described later, provides additional support to the header member 12.

As will be observed from Figure 1 the frame 10 is provided with holes 100. These serve the purpose of securing the assembled  
 30 frame 10 to shuttering 102 after the frame 10 is placed in position

in the wall. Concrete 104 is poured around the frame 10 and after setting the shuttering 102 is removed, the frame 10 becoming an integral part of the wall. The liners and sashes are then placed in position as described below.

5           In assembling a window frame in accordance with the present invention the two vertical jambs 14 and 16 are placed in the desired position and then the sill member 18 and the vertical header 12 are placed so that there is engagement as illustrated in Figure 1 between the projections 90 and 84 and channels 66 and 58,  
10           and between projections 88 and 82 and channels 36 and 26, respectively. The upper and lower edges of the vertical jambs 14 and 16 are therefore in continuous contact with the adjacent surfaces of the header member 12 and the sill member 18 throughout their width. The flanges 20 and 22 similarly bear upon the outer and inner flanges 78 and 76 respectively adjacent their upper edges and the lower  
15           edges of these flanges 76 and 78 bear upon the upper surface of the adjacent portions of sill member 18.

          When the panels are all in the attitude illustrated in Figure 1 the relationship between the various adjacent components  
20           is secured by welding at all points of mutual contact between vertical jambs 14 and 16 and sill member 18 and header member 12. It will be observed that when finally assembled channels 26 and 58 are vertically disposed, one above the other and channels 36 and 66 are vertically disposed one above the other. This permits the  
25           insertion of the actual window lights.

          The provision of the channels 92 on the vertical jambs 14 and 16 as well as providing rigidity to these members also provides rigidity to the entire structure and when finally secured together by welding the structure is extremely rigid and strong.

30           In channels 26 and 36 of the header member 12 a pair of

channel dividing members or sash receiving members 106 and 108 respectively are provided. These sash receiving members are of a material which has a low coefficient friction material. They each comprise a channel formed with outer walls 110 and 112 and  
5 a top wall 114 from the middle of which a dividing wall 116 extends downwardly. This arrangement permits double glaze or self-storing windows to be installed so that the window rails will engage with and slide along their respective channels. These sash receiving members are rigidly secured in position by means of  
10 screws or an adhesive or in any suitable manner. The corresponding sash receiving members 118 and 120, in channels 58 and 66, respectively, of the sill member 18 have a similar form to those mounted in the header member 12 and they are secured in the same manner.

15 Thus it will be seen that the integral reinforcing channels 58 and 66 and 26 and 36 have a double function. They not only provide the window frame with strength and rigidity but they also serve as means for supporting and defining the tracks in which the windows will slide when the frame is finally installed. In the  
20 same manner the vertical channels such as 92 on the vertical jambs 14 and 16 have a dual function. They not only provide additional rigidity and strength to the vertical jambs and the window frame as a whole, but, by virtue of their position intermediate the window tracks they will provide a draught break at least at the  
25 window edges.

As mentioned previously the external sill portion 54 slopes upwardly and extends substantially along the entire exposed length of the sill member 18. However, to permit quicker run off of water the ends of the sill portion 54 are sloped down-  
30 wardly as at 122 towards the vertical jambs 14 and 16 to provide

run off under conditions of possible flooding. Furthermore, the intermediate planar portion 74 of the sill member 18 has at least one depression 124 normal to its length which thereby provides a path for flow of accumulated water from the channel 58 to the channel 66 and thence out through the sloping ends 122 of the external sill 54.

It is a further feature of the invention that the frame 10 can be easily adapted to include a series of bars 126, see Figure 2, which are placed in position prior to setting the frame 10 in the concrete 104. For ease of installation each bar 126 adjacent its upper end has an abutment 128 which locates the bar 126 vertically in the frame 10. The lower end of each bar 126 projects through the frame 10 and the protruding ends of the bars 126 serve to key them into the concrete 104. In the assembled form the frame 10 and the bars 126 serve as an escape proof window.

After the frame 10 has been set in position the upper and lower channel liners 106, 108 and 118 and 120 respectively are placed in position. As indicated in Figure 4 the frame 10 can then accommodate a double window formed of four sashes 130, 132, 134 and 136.

As indicated in Figure 5 each vertical edge of each sash has a liner 138 and since upper and lower edges of each sash are enclosed in the channel dividing liners 106, 108 and 118 and 120 the result is that the sashes are completely insulated from the frame 10. Hence, where the frame is preferably made of steel for the purpose of strength and cheapness the sashes may be made of aluminum since corrosion formed by electrolytic action is avoided.

While the present invention has been described with particular reference to a specific structure it will be appreciated that other modified embodiments may be employed without departing

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from the spirital scope of the invention as defined by the appended claims.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A preformed window frame structure constituting a structural element comprising in integral combination a rigid header member and a sill member and a pair of vertically extending rigid jamb members rigidly secured between corresponding ends of said header and sill members to define a rectangular opening, said jamb members each being formed to include at least one vertically extending reinforcing element intermediate the width thereof, said header member and said sill member each being formed to provide inner and outer longitudinally extending reinforcing channels, such channels on said header and said sill member being vertically aligned and channel dividing members mounted within said channels in said header and sill members to provide within each of said reinforcing channels a pair of sash-receiving channels.

2. A preformed window frame structure as claimed in Claim 1 wherein said reinforcing elements on each of said vertical jambs extends into said opening intermediate said channels on said header and sill members.

3. A preformed window frame structure as claimed in Claim 1 wherein said reinforcing element has a post form with exterior, interior and side walls extending into said opening.

4. A preformed window frame structure as claimed in Claim 1 wherein said channel dividing members are of a low friction material.

5. A preformed window frame structure as claimed in Claim 1 further including securing means on each of said header members, sill member and jamb members, said securing means comprises flanges extending outwardly from said header member, said sill member and said vertical jambs.

6. A preformed window frame structure as claimed in

Claim 1 wherein said sill member comprises a unitary element formed to provide an external sill portion and an internal sill portion, said external sill portion sloping down away from said internal sill portion and the terminal ends of said external sill portion being sloped down towards said jambs.

7. A preformed window frame structure as claimed in Claim 6 wherein said internal sill portion has inner and outer reinforcing channels, said channels being spaced apart by an intermediate planar portion and at least one depression in said intermediate planar portion which provides a run off for water to said external sill portion.

8. A preformed window frame structure as claimed in Claim 1 having vertically disposed bars connecting said header and said sill members, the ends of said bars projecting therefrom to provide a key for concrete poured around said preformed window frame structure.



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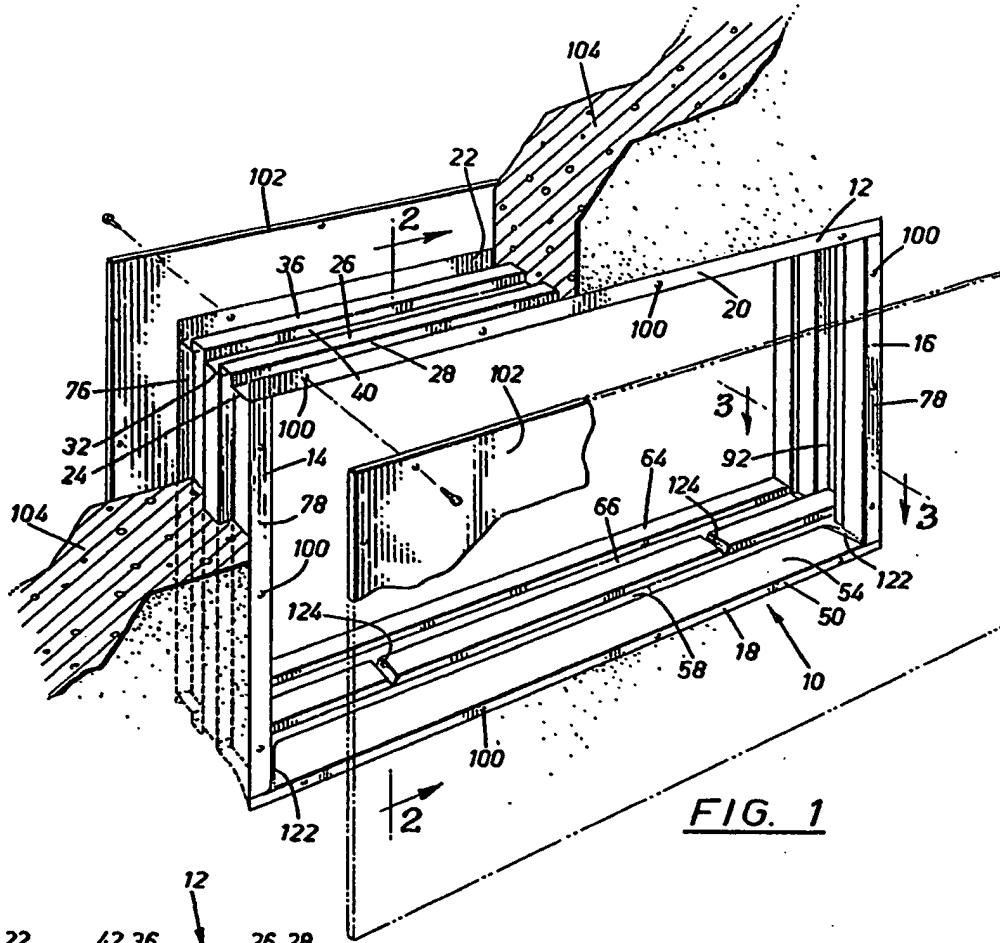


FIG. 1

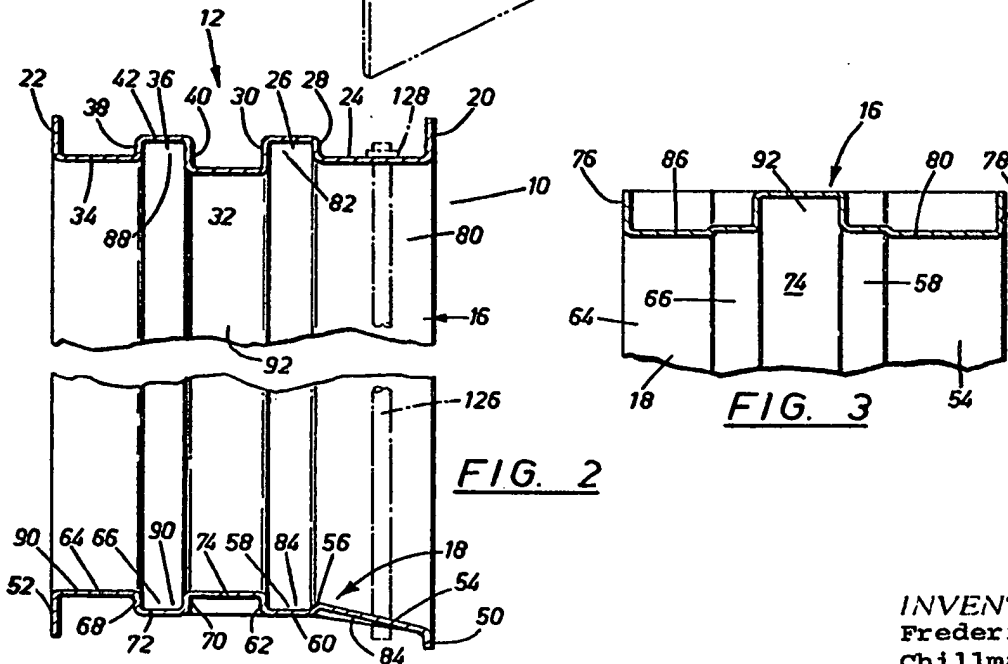


FIG. 2

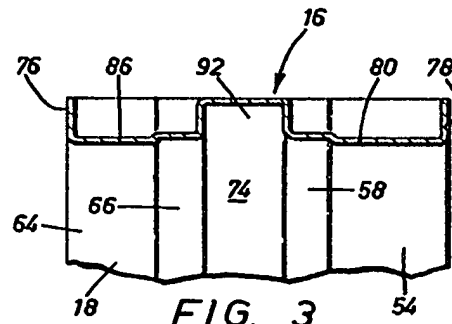


FIG. 3

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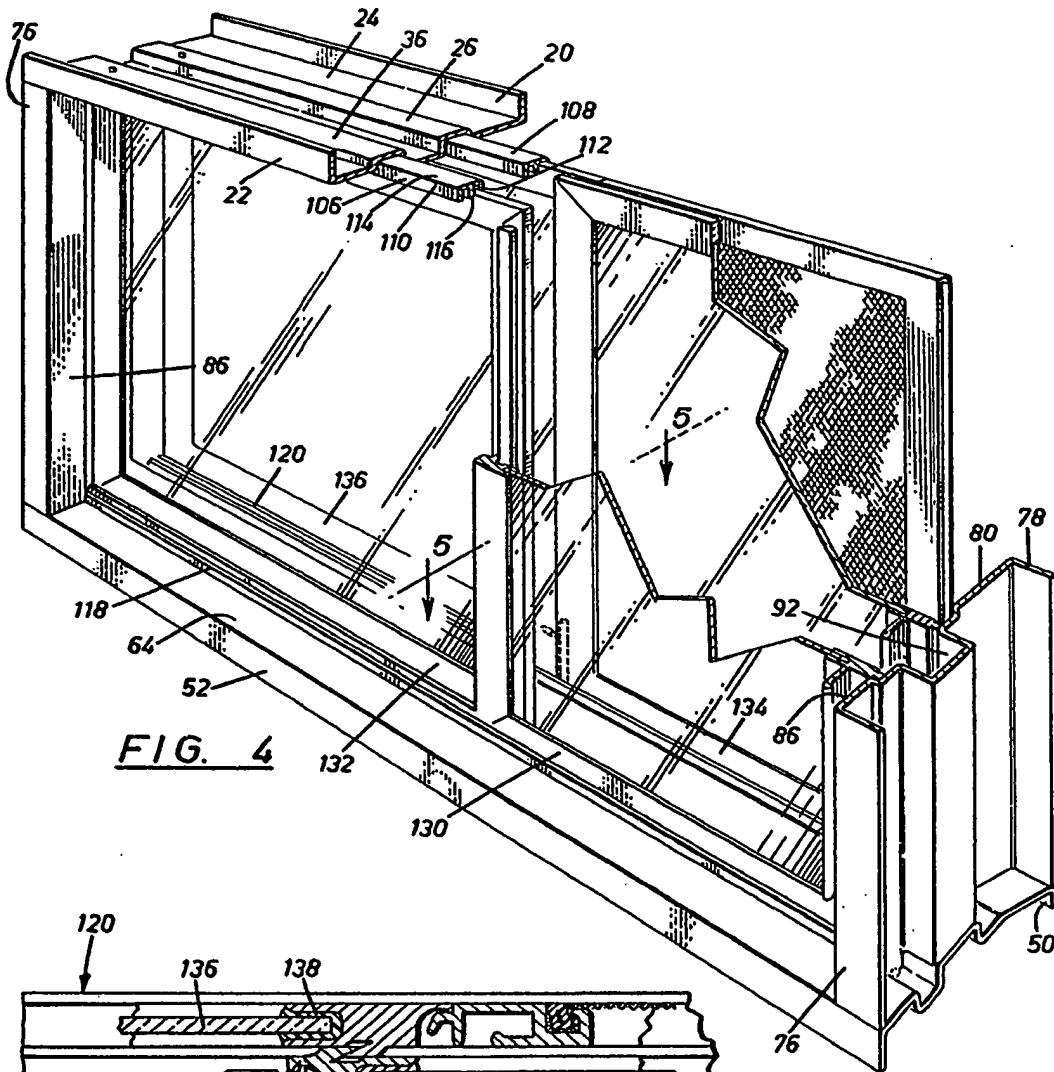


FIG. 4

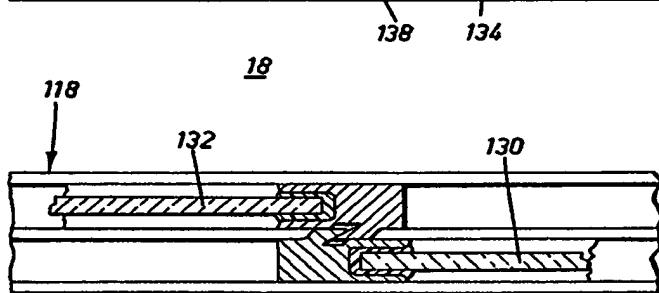
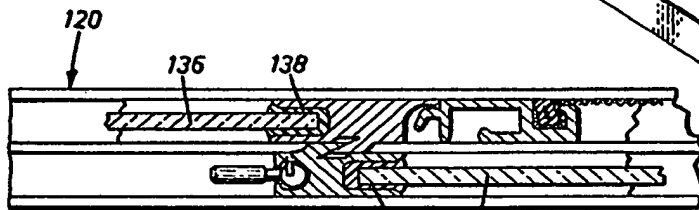


FIG. 5

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